

REMARKS/ARGUMENTS

Claims 1-16 are pending and were examined as being obvious over the combination of U.S. Patent No. 6,210,392 to Vigil et al. in view of U.S. Patent No. 5,866,561 to Unga. Such rejections are respectfully traversed.

Claim 1, as presently pending, reads as follows.

*"1. A method for treating a blood vessel for arteriosclerotic disease, said method comprising injecting an estrogen into a location beyond the endothelium of the blood vessel and into a peri-vascular space or the adventitia surrounding the blood vessel wall."*

Among other elements, claim 1 requires that an estrogen be injected "into a peri-vascular space or the adventitia surrounding the blood vessel wall."

The Examiner now relies on the Vigil '392 patent as teaching such injection into a peri-vascular space or the adventitia. In particular, the Examiner relies on the teachings at Col. 7, lines 1-20 of Vigil, which reads as follows.

*"The blood vessel 11 includes multiple layers. To facilitate the present discussion, some of the layers, namely, an endothelium layer 35a, a basement membrane layer 35b, a lamina layer 35c, a media layer 35d, and an adventitia layer 35e are illustrated in FIG. 3B. The basement membrane layer 35b, the lamina layer 35c, the media layer 35d shall be considered internal layers. Importantly, with the present device 10, the depth of penetration of dispenser 20 can be precisely controlled by controlling the length of each dispenser 20. Thus, the device 10 is able to deliver the fluid 13 to a desired, target layer of the blood vessel 11. For example, as illustrated in FIG. 3B, the dispenser 20 penetrates the endothelium layer 35a, the basement membrane layer 35b, and the lamina layer 35c and precisely delivers the fluid 13 to the media layer 35d, i.e. the target layer in this example. Alternately, for example, a shorter dispenser 20 could be utilized to deliver the fluid 13 to the lamina layer 35c. Additionally, with the present invention, the device 10 can be used to simultaneously dilate the vessel 11."*

From this passage, as well as reference to Fig. 3B of the Vigil patent, it can be seen that Vigil specifically teaches away from injecting substances into the adventitia or the peri-vascular space surrounding the blood vessel wall. As is apparent from Fig. 3B, the blood vessel

wall includes a number of layers, the outermost of which is the adventitia layer 35c. Vigil specifically teaches that the depth of penetration of the "dispenser 20 can be precisely controlled by controlling the length of each dispenser 20." The passage then goes on to state that the dispenser 20 "precisely delivers fluid 13 to the media layer 35d, i.e., the target layer in this example. Alternately, for example, a shorter dispenser 20 could be utilized to deliver the fluid to the lamina layer 35c." No provision or suggestion is made of using a longer target.

Nowhere is there a teaching or suggestion anywhere in Vigil that the dispenser 20 have a length sufficient to deliver substances into the adventitia layer, much less into the peri-vascular space beyond the adventitia layer.

For these reasons, Applicants believe that the rejection stated by the Examiner must fail since neither Vigil nor Ungs teach injecting an estrogen or any other substance into the adventitial layer or into the peri-vascular space beyond the adventitia layer.

For completeness, however, Applicants wish to point out that intravascular injections catheters having needles which can deliver substances beyond the adventitia layer are known. Indeed, the exemplary device used to enable the present invention is described in Application Serial No. 09/877,653, incorporated by reference in paragraph 33 of the present application, which is now published as US-2002/0188310, which Applicants will concede as prior art since, although it has common inventorship, it is not commonly assigned.

Even though vascular injection catheters capable of injecting substances into/and/or beyond the adventitia of a blood vessel wall were known prior to the present invention, the use of such catheters for treating arterial sclerotic disease by injecting estrogens was not known and would not have been obvious, even in view of the teachings of Ungs. Ungs specifically teaches that estrogens are useful for inducing angiogenesis in blood vessels by delivering estrogens into the blood vessel walls, not into the adventitia or the peri-vascular spaces surrounding the blood vessel. Based on the teachings of Ungs, it would not have been predictable whether advancement of a needle into and/or beyond the adventitia would allow the

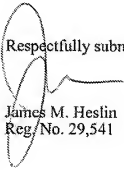
estrogen to achieve its effect or whether such injection might actually harm the blood vessel or exacerbate the underlying stenosis.

For these reasons, Applicants believe that there would have been no motivation for one skilled in the art to combine the teachings of Unga; i.e., that estrogens injected into the wall of a blood vessel promote angiogenesis, with the prior art renal catheters which allow for injection into the adventitia or into the peri-vascular regions beyond the adventitia.

Thus, Applicants believe that all pending claims are in condition for allowance and request that the application be passed to issue at an early date.

If for any reason the Examiner believes that a telephone conference would in any way expedite prosecution of the subject application, the Examiner is invited to telephone the undersigned at 650-326-2400.

Respectfully submitted,

  
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